

## ABSTRACT OF THE DISCLOSURE

The synchronization technique invention uses inherent characteristics of the frequency domain representation of the data symbols. By computing a differential-in-frequency function across a large number of OFDM tones, robust estimates of time and frequency offset can be easily obtained. The technique also allows the system designer to directly trade performance in the presence of channel impairments against signal processing complexity. Analysis and simulation have shown good performance in the presence of noise and channel delay dispersion, impairments that are the harshest in a wireless environment.

Prior techniques for OFDM synchronization have focussed on the time domain representation of the signal. Those that have recognized the translation of time and frequency offset to the frequency domain have not considered the systematic modification of the signal by the offsets.

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